

**Emergent diagnostic and interventional cardiac catheterizations within 30 days post congenital heart surgery in children – a single centre 15 years experience**

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**Background:** To assess indications, feasibility, safety and outcome of emergent cardiac catheterization procedures in the early postoperative period within 30 days after congenital heart surgery (CHS) at our institution.

**Methods:** Retrospective, single centre case review study of all emergent cardiac catheterizations between 01/2001 and 12/2015 within 30 days after CHS.

**Results:** A total of 207 unplanned (83 diagnostic and 124 interventional) procedures were performed in 168 patients. Median age at catheterization was 4 months (range 0 – 207), median weight was 4.9 kg (range 2 – 85). 115 procedures (56%) were performed in patients with univentricular heart disease. Catheterizations were performed at a median of 7 days (range 0 – 30) after CHS. Previous cardiac surgery was bidirectional/total cavopulmonary connection (BCPC/TCPC) (n=66, 32%), shunt- or Norwood/comprehensive Norwood I+II procedures (n=45, 22%), right ventricular outflow tract surgery/RV-PA graft implantation (n=29, 14%), arterial switch-operation (n=15, 7.3%), repair of aortic coarctation (n=11, 5.3%), and others (n= 41, 19.8%). Indications for catheterization were prolonged postoperative course (13.5%), post BCPC/TCPC (10.1%), hypoxemia (17.4%), ECG-changes/suspected coronary pathology (12.6%), suspected pulmonary artery stenosis (17.9%), assumed re-coarctations (4.3%) and others (16.4). Diagnostic procedures revealed significant pathology leading to early redo-surgery (n=16, 19.3%). 124 interventions included stent-implantations/balloon-dilatations in/of pulmonary arteries (n=56, 45%) or (re-) coarctations (n=12, 9.7%), coil-embolizations of aortopulmonary (n=14, 11.3%) and venovenous collaterals (n=5, 4%), manipulations of shunts and fenestrations (n=12, 9.6%), and others. 13 patients were catheterized under mechanical extracorporeal support. Immediate success rate was 96%. There was no intraprocedural mortality. There were 3 (1.3%) major complications (SVC rupture n=1, severe intracranial bleeding n=1, cardiopulmonary arrest and emergency surgery n=1) and 8 (3.9%) minor complications (arrhythmias, vessel thrombosis, minor blood vessel dissections, pneumothorax). Risk factor analysis revealed no statistical significant difference for the occurrence of complications for patients' weight ( $p=0.194$ ) or underlying uni- versus biventricular heart disease ( $p=0.59$ ).

**Conclusion:** Emergent cardiac catheterizations can be performed safely, with a high diagnostic and therapeutic value in the early postoperative period. Therefore, diagnostic and interventional catheterizations should not be withheld from these patients at any time after CHS